

## ***Lissotriton vulgaris* paedomorphs in south-western Romania: a consequence of a human modified habitat?**

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Submitted on: 2010, 10<sup>th</sup> March; revised on: 2011, 2<sup>nd</sup> February; accepted on: 2011, 2<sup>nd</sup> February.

**Abstract.** A *Lissotriton vulgaris* paedomorph population was identified for the first time ever in south-western Romania. The newts inhabiting a permanent but artificial habitat, surrounded by agricultural fields.

**Keywords.** Paedomorphosis, altered habitat, *Lissotriton vulgaris*, SW Romania.

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Paedomorphosis, the phenomenon in which larval characteristics are retained through sexual maturity, is widely spread amongst Urodela (Denoël et al., 2005a). There are several mechanisms that tie the occurrence of paedomorphosis to certain local environment conditions (Semlitsch, 1987; Semlitsch et al., 1990; Ryan and Semlitsch, 2003; Denoël et al., 2005a) and it is usually expected in situation where the aquatic environment is more favorable than the terrestrial habitat (Whiteman, 1994). Prior to this study, it was only rarely encountered in Romania, and only for one species: *Lissotriton vulgaris* (Fuhn, 1960, 1963; Covaciu-Marcov and Cicort-Lucaciu, 2007). The aim of this paper is to provide evidence for the first known population of paedomorph *L. vulgaris* in south-western Romania.

The candidate paedomorph population is found in the south-western part of Romania (44°26'54,49"N / 22°43'01,51"E), in Mehedinți County, near the village of Scăpău (Fig. 1A). The habitat is represented by an artificial ditch, with concrete sides, with the water level being about 1,5 m lower than that of the surrounding lands (Fig. 1B). The channel stretches for several kilometers, is tens of years old, and is indicative of wide-spread regional agricultural modifications. The water level in the ditch is constant year-round at 60-70 cm but can reach up to 1m in depth. Aquatic vegetation in the ditch is dense and consists of several aquatic or amphibious plants and algae, with reeds forming compact bands in some locations. Paedomorphs were captured in a 100 m stretch of the ditch.

We sampled this population in 2007 and 2008 and observed several adults with gills and numerous larvae. In 2007 we captured a gilled female but did not consider this an

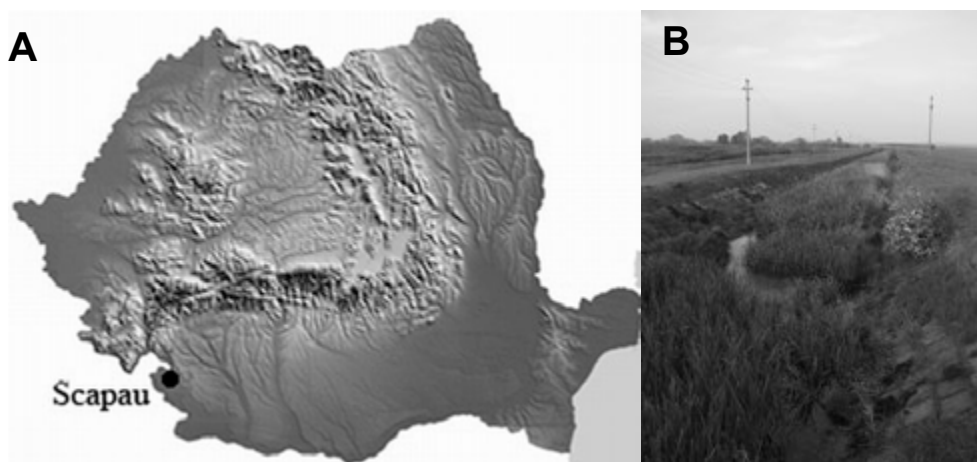


Fig. 1. The geographical position (A) of the studied habitat (B) near Scăpău locality (south-western Romania).

important find as paedomorphosis was induced by similar conditions in western Romania in the same year (Covaciu-Marcov and Cicort-Lucaciu, 2007). On 25 April 2008, we captured another gilled female paedomorph. We then decided to investigate the habitat more thoroughly. We used round nets assembled on 2 m long metal rods, utilized from the shore or in the water. Along those 100 m of the ditch had worked three people about three hours, making several hundred draggins. We managed to capture five gilled females and two gilled males, but no metamorphs. On subsequent visit in July 2008 we managed to capture over 40 larvae and another paedomorph female. The breeding population at this location appears to be made entirely of gilled adults.

Both sexes of paedomorphs have normal dimensions for adults (total length of 7.0–8.2 cm). Their gills are well developed, with the longest pair reaching 6.5 mm, longer than in other similar cases (Litvinchuk, 2001). The body colour and markings of these paedomorphs are the same as the adults of both sexes (Fig. 2). The males presented sexual characteristics, including the swollen cloacae, spots on the side and a well developed dorsal crest. The larvae captured on the 10<sup>th</sup> of July were different sizes, between 2 and 4 cm, indicating that they belong to different spawn and period of egg laying.

Newts are generally negatively affected by the presence of fish in their habitats (Joly et al., 2001; Hartel and Öllerer, 2009). In the case of paedomorphs several populations have disappeared because of fish introduction (Denoël et al., 2005b, 2009). In the Scăpău channel there are at least 5 different species of fish (*Lepomis gibbosus*, *Carassius carassius*, *Misgurnus fossilis*, *Rodeus sericeus*, *Cobitis taenia*) and numerous Odonata and Dytiscidae larvae. It is likely that the newts minimize predation by using microhabitats within aquatic vegetation (Denoël and Andreone, 2003).

The appearance of this phenomenon at Scăpău is likely to be linked with local habitat characteristics. Near Scăpău there is little precipitation and newts are generally quite rare in the region (Covaciu-Marcov et al., 2009). In this context, the permanent channel, with its vegetation, offers one of the few suitable habitats in this region. However, this ditch is



**Fig. 2.** Paedomorph individuals of *L. vulgaris* from the studied habitat (left: male, right: female).

situated among heavily modified and degraded terrain that has been used for agriculture. The fields around the channel are represented either by cattle pastures or by fields cultivated with various cereal crops. The occurrence of the *L. vulgaris* paedomorph population from Scăpău is possibly a consequence of antropogenic activities that have destroyed the surrounding terrestrial habitat.

#### ACKNOWLEDGEMENTS

We thank Dr. Thomas Luhring, whose comments on an earlier version of the manuscript have essentially contributed to improve its quality.

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